

By Express Mail # EL913695748US

**APPLICATION FOR UNITED STATES  
LETTERS PATENT**

**ROTATING SHEARING DEVICE AND METHOD FOR SEPARATING THE FRONT  
CROP AND REAR CROP FROM RUNNING ROLLING STOCK**

Inventor:

**Rainer HELLENBRANDT**

Patent Office

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

The invention relates to a rotating shearing device for cropping fast-running rolling stock and a method for separating the front crop and the rear crop from the running rolling stock by a shearing device.

### **2. Description of the Related Art**

A rotating shearing device of the generic type is disclosed in U.S. Patent No. 3,491,640.

A further shearing device of this type is shown in DE-A 24 35 486, which also shows the conventional overall plant which consists of two shearing devices arranged one behind the other. The front crop is separated from the rolling stock by the front or first shearing device. After the rolling stock is run through, the rear crop is then separated by the second shearing device. Each of the guides arranged in front of the shearing devices is mounted pivotably, that is to say the end of the guide facing the shearing device is capable of being raised and lowered in relation to the respective fixedly arranged shearing device. The rolling stock can therefore be brought into the cutting range of the annular knives, for this purpose the guide arranged in front of the shearing device being pivoted upward.

Fixedly positioned guides are provided behind the shearing devices for receiving the front crop and rear crop, respectively.

The necessary use of two shearing devices, with all the associated guides, drives and controls, gives rise to very high plant costs which then, of course, also entail high operating and maintenance costs. Furthermore, these plants require a large amount of space.

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## **SUMMARY OF THE INVENTION**

The object of the present invention is to provide a shearing device and method for separating the front crop and rear crop with reduced costs and reduced space requirements.

The object of the present invention is achieved by a rotating shearing device for  
5 cropping fast-running rolling stock, in particular wire, with two axially cutting annular knives  
which rotate about their axis at the same rotational speed with end cutting edges directed toward  
one another. The cutting edges converge to the clearance necessary for separating the rolling  
stock during a cutting operation and lie in planes which are arranged at an acute angle to one  
another. Rolling stock is guided to the shearing device by a front guide and from the shearing  
10 device by a rear guide. The running stock may be guided either through the space between the  
annular knives which is free for the cut-free passage of the rolling stock or into the wedge-  
shaped cutting region of the annular knives which is defined by the gripping angle. The front  
guide is pivotable, the rear guide is fixed and the shearing device is raisable and lowerable in  
relation to the rear guide.

15 According to the invention, only one shearing device is used which separates both  
the front crop and the rear crop. Which part is separated and correspondingly conveyed away  
determines the interaction of the guide part arranged in front of the shearing device and behind  
the shearing device with the shearing device or the respective position of the annular knives in  
relation to one another.

20 Other objects and features of the present invention will become apparent from  
the following detailed description considered in conjunction with the accompanying drawings.  
It is to be understood, however, that the drawings are designed solely for purposes of

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### **BRIEF DESCRIPTION OF THE DRAWINGS**

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In the drawings, wherein like reference characters denote similar elements throughout the several views:

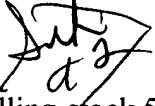
Fig. 1 is a schematic view of a shearing device according to the present invention with a front guide that is in a lower position and annular knives that are in a basic position;

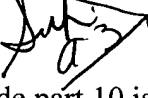
Fig. 2 is a schematic view of the shearing device of Fig. 1 with the front guide in a middle position and the annular knives in the basic position;

Fig. 3 is a schematic view of the shearing device of Fig. 1 with the front guide in the middle position and the annular knives in a high position; and

Fig. 4 is a schematic view of the shearing device of Fig. 1 with the front guide in an upper position and the annular knives in the high position.

**DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS**

 Fig. 1 shows a chop-shearing device 100 at the start of the run-through of the rolling-stock 50 in the free space between the annular knives 25 mounted in a shearing device frame 20. The arrangement of the annular knives is as disclosed in U.S. Patent 3,491,640 (Poran), the entire contents of which is incorporated herein by reference.

 In the initial position of the chop-shearing device 100 shown in Fig. 1, a front guide part 10 is in its lower position and the shearing device frame 20 in its basic position. The tip of the rolling-stock 50 runs obliquely downward into the lower of the rear three rear guides 31, 32, 33 and thus arrives at the chop-shearing device. For separating the front crop 51 of the rolling stock 50, the front guide part 10 is pivoted upward as far as a middle position as shown in Fig. 2. Since the annular knives 25 are in this case in their cutting position, separation of the running stock occurs, and the cut-off front crop 51 runs further on through the lower guide 33 of the three rear guides 31, 32, 33. The rolling stock 50, now free of the front crop 51, is guided through the middle guide 32 of the three rear guides 31, 32, 33 horizontally to the winder.

During the further run-through of the rolling stock 50, the annular knives 25 are separated or opened and the shearing device frame 20 is moved into a high position as shown in Fig. 3 without cutting the rolling stock 50. Subsequently, the annular knives 25 are brought back to the cutting position in which the cutting edges are against one another.

To separate a rear crop 52, the front guide part 10 pivots into the upper position as shown in Fig. 4. The rear crop 52 is separated from the rolling stock 50 and is led through the upper guide 31 of the rear guide parts 31, 32, 33 to the chop-shearing device 100.

After the front guide part 10 has been pivoted downward and the shearing device 20 moved down into the basic position, the initial position as shown in Fig. 1 is reached again.

Thus, while there have shown and described and pointed out fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitutions and changes in the form and details of the devices illustrated, and in their operation, may be made by those skilled in the art without departing from the spirit of the invention. For example, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results are within the scope of the invention. Moreover, it should be recognized that structures and/or elements and/or method steps shown and/or described in connection with any disclosed form or embodiment of the invention may be incorporated in any other disclosed or described or suggested form or embodiment as a general matter of design choice. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.